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ABSTRACT

This book is a collection of essays forming a mosaic of theory, research, and practice directed at the task of spreading mathematical knowledge based on the learning theory of constructivism. The authors collectively address questions raised by the observation that current practice frequently generate in the student an aversion to mathematics. Each author, having extensive experience in teaching as well as educational research, approaches the problem with the conviction that knowledge is not simply transferred from one individual to another, but actively built up by each learner in his or her own mind. This notion is today embraced by all who call themselves "constructivists". The 11 essays include: (1) "There Is No More Safety in Numbers: A New Conception of Mathematics Teaching" (Philip Steedman); (2) "Mathematical Discussions" (John Richards); (3) "Notations and Representations as Mediators of Constructive Processes" (James Kaput); (4) "Making Math Mean" (Jack Lochhead); (5) "Treatment of Refutations: Aspects of the Complexity of a Constructivist Approach to Mathematics Learning" (Nicolas Balacheff); (6) "Learning to Listen: A Student's Understanding of Powers of Ten" (Jere Confrey); (7) "Understanding Students' Beliefs about Probability" (Clifford Konold); (8) "A Constructivist Approach to Second Grade Mathematics" (Paul Cobb, Terry Wood, and Erna Yankel); (9) "The Constructivist Teaching Experiment: Illustrations and Implications" (Leslie Steffe); (10) "Didactic Constructivism" (Jan van den Brink); and (11) "Two Layers of Constructivist Curricular Interaction" (Robert Underhill). (MDH)

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